

EPA Region 5 Records Ctr.



228723

## Second Five-Year Review Report

### Spiegelberg Landfill Site Livingston Co., Michigan

January, 2005

Prepared By:

U.S. EPA Region 5  
Chicago, Illinois

Approved by:

*for* Richard C. Karl, Director  
Superfund Division

Date:

1/28/05

## Second Five-Year Review Report

### Table of Contents

List of Acronyms .....	4
Executive Summary .....	5
Five-Year Review Summary Form .....	6
<b>I. Introduction .....</b>	<b>8</b>
<b>II. Site Chronology .....</b>	<b>9</b>
<b>III. Background .....</b>	<b>10</b>
Physical Characteristics	
Land and Resource Use	
History of Contamination	
Initial Response	
Basis for Taking Action	
<b>IV. Remedial Actions .....</b>	<b>12</b>
Remedy Selection	
Remedy Implementation	
Significant Differences	
Clean-up Standards	
System Operation/Operation and Maintenance	
<b>V. Progress Since the Last Review .....</b>	<b>16</b>
<b>VI. Five-Year Review Process .....</b>	<b>16</b>
Administrative Components	
Community Notification and Involvement	
Interviews	
Site Inspection	
Document Review/Data Review	

<b>VII.</b>	<b>Technical Assessment</b>	<b>17</b>
	<i>Question A:</i> Is the remedy functioning as intended by the decision documents?	17
	<i>Question B:</i> Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid?	18
	<i>Question C:</i> Has any other information come to light that could call into question the protectiveness of the remedy?	19
<b>VIII.</b>	<b>Issues</b>	<b>19</b>
<b>IX.</b>	<b>Recommendations and Follow-up Actions</b>	<b>20</b>
<b>X.</b>	<b>Protectiveness Statement</b>	<b>20</b>
<b>XI.</b>	<b>Next Review</b>	<b>20</b>

List of Documents Reviewed

Table 1	Clean-up Standards
Figure 1	Site Location Map

## List of Acronyms

<u>ACRONYM</u>	<u>NAME OR TERM</u>
CERCLA/SARA	Comprehensive Environmental Response, Compensation and Liability Act/Superfund Amendments and Reauthorization Act of 1986 (Superfund)
CA	Cooperative Agreement with MDEQ
COC	Contaminants of Concern
HLSC	Human Life Cycle Safe Concentration
HSL	Hazardous Substance List (chemicals)
MCL	Maximum Containment Level (drinking water)
MDNR	Michigan Department of Natural Resources
MDEQ	Michigan Department of Environmental Quality
NPL	National Priorities List
O&M	Operation and Maintenance
PFS	Phased Feasibility Study (soils)
ppb	Parts per Billion concentration
PRP	Potential Responsible Parties
ROD	Record of Decision
RD/RA	Remedial Design/Remedial Action
RI/FS	Remedial Investigation/ Feasibility Study
SOW	Statement of Work
TBC	To Be Considered
U.S. EPA	United States Environmental Protection Agency
VAS	Vertical Aquifer Sampling
VOC	Volatile Organic Compound

## **Executive Summary**

The purpose of a statutory five-year review is to evaluate whether a completed remedial action remains protective of human health and the environment where hazardous waste remains on-site at levels that do not allow for unlimited use and unrestricted exposure. The methods, findings, and conclusions of reviews are documented in Five-Year Review reports. In addition, Five-Year Review reports identify issues found during the review, if any, and identify recommendations to address them.

U. S. EPA conducted this statutory five-year review under Section 121(c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Contingency Plan (NCP).

This review will be placed in the Site files and local repositories for the Spiegelberg Superfund Site at the following locations and be available for viewing during normal business hours:

Brighton District Library,  
off Grand River on Library Drive  
Brighton, Michigan

Hamburg City Library  
7225 Stone Street  
Hamburg, Michigan

U. S. Environmental Protection Agency  
Region 5 Records Center- Seventh floor  
77 W. Jackson Blvd-7th floor.  
Chicago, IL 60604

## Five-Year Review Summary Form

SITE IDENTIFICATION		
Site name (from WasteLAN): Spiegelberg Landfill		
EPA ID (from WasteLAN): MID980794481		
Region: 5	State: MI	City/County: Hamburg, Livingston Co.
SITE STATUS		
NPL status: <input checked="" type="checkbox"/> Final <input type="checkbox"/> Deleted <input type="checkbox"/> Other (specify)		
Remediation status (choose all that apply): <input type="checkbox"/> Under Construction <input checked="" type="checkbox"/> Operating <input type="checkbox"/> Complete		
Multiple OUs? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	Construction completion date: 6/29/1995 (OU2)	
Has site been put into reuse? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
REVIEW STATUS		
Lead agency: <input checked="" type="checkbox"/> EPA <input type="checkbox"/> State <input type="checkbox"/> Tribe <input type="checkbox"/> Other Federal Agency		
Author name: Kenneth Glatz		
Author title: Remedial Project Manager	Author affiliation: Superfund-RRB 2, Section 6	
Review period: January 7, 2000 to January 10, 2005		
Date(s) of site inspection: Several, jointly by U.S. EPA and MDEQ. Latest 11/9/2004		
Type of review: <input checked="" type="checkbox"/> Post-SARA <input type="checkbox"/> Pre-SARA <input type="checkbox"/> NPL-Removal only <input type="checkbox"/> Non-NPL Remedial Action Site <input type="checkbox"/> NPL State/Tribe-lead <input type="checkbox"/> Regional Discretion		
Review number: 1 (first) <input checked="" type="checkbox"/> 2 (second) <input type="checkbox"/> 3 (third) <input type="checkbox"/> Other (specify)		
Triggering action: <input type="checkbox"/> Actual RA Onsite Construction at OU # 1____ <input type="checkbox"/> Actual RA Start at OU#____ <input type="checkbox"/> Construction Completion <input checked="" type="checkbox"/> Previous Five-Year Review Report <input type="checkbox"/> Other (specify)		
Triggering action date (from WasteLAN): First five year report January 7, 2000		
Due date (five years after triggering action date): January 7, 2005		

**Issues:**

Operation of the 1990 ROD remedy of pump and strip had effectively reduced the contaminants of concern to near clean-up standards by 1998. In 1998 an ESD authorized "intermittent pumping" status operation (equipment left in place but not operated) as provided for in the SOW. The 1998 ESD also revised the groundwater cleanup standards. The pump and strip remedy was to be reactivated if the groundwater monitoring results indicated a "rebound" in risk based or hazard index chemical compounds during the post remedy monitoring period. The confirmation monitoring period (post intermittent pumping monitoring) consisted of twelve monitoring events from September 1998 to December 2004. The monitoring results have demonstrated continued compliance with the 1998 Cleanup Standards, and has established that the Site has achieved groundwater cleanup goals. No contaminants of concern have been found above MCLs since 1998. In addition, no other HSL compounds were present above risk based levels for the final December 2004 monitoring event. The HSL analysis includes all chemicals found during the RI. Conducting the HSL analysis insures that all chemicals found during the RI are below health based values.

**Recommendations and Follow-up Actions:**

This is the final five-year review for the Spiegelberg Site. Groundwater treatment has restored the aquifer to clean-up standards. Delisting should be evaluated and pursued as appropriate.

**Protectiveness Statement:**

The remedy is protective of human health and the environment, and was constructed in accordance with both Records of Decision. All waste and soils in the paint sludge pit were removed down to groundwater under the 1986 source removal ROD. The 1990 ROD for groundwater restoration has been completed.

## **Five-Year Review Report**

### **I. Introduction**

#### The Purpose of the Review

The purpose of a statutory five-year review is to evaluate whether a completed remedial action remains protective of human health and the environment at sites where hazardous waste remains on-site at levels that do not allow for unlimited use and unrestricted exposure. The methods, findings, and conclusions of reviews are documented in Five-Year Review reports. In addition, Five-Year Review reports identify issues found during the review, if any, and identify recommendations to address them.

#### Authority for Conducting the Five-Year Review

U. S. EPA is preparing this Five-Year Review pursuant to CERCLA Section 121(c) and the National Contingency Plan (NCP). CERCLA Section 121(c) states:

*If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgement of the President that action is appropriate at such site in accordance with section 104 or 106, the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.*

U.S. EPA interpreted this requirement further in the NCP; 40 Code of Federal Regulations (CFR) Section 300.430(f)(4)(ii) which states:

*If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for the unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.*

#### Who Conducted the Five-Year Review

Mr. Kenneth Glatz, Remedial Project Manager, U.S. EPA Region 5, performed this five-year review. The Five-Year Review was based, in part, on the ongoing oversight of monitoring activities at the Site from January 2000 to present, and the interpretation of that data. In addition the Project Manager reviewed documents, including the RODs, SOWs, ESDs, PCOR, first Five-Year Report, and results of supplemental studies conducted at the Site. U.S. EPA completed this Five-Year Review based upon the information obtained from these sources and activities.

## Other Review Characteristics

This is the second five-year review for the Spiegelberg Site. The triggering action for this review is the date the first five-year review was signed, January 7, 2000.

## **II. Site Chronology**

<b><u>Event</u></b>	<b><u>Date</u></b>
NPL Listing	December, 1982
Community relations Plan	May, 1984
CA	May, 1984
NPL RP Search	December, 1985
Notice Letters	December, 1985
Soils PFS	September, 1986.
ROD (soils excavation)	September, 1986
RI Report (groundwater)	September, 1988
Consent Decree (source control)	December, 1988
FS Report (groundwater)	January, 1990
Source Control final Inspection	February, 1990
ROD (groundwater )	June, 1990
ESD	June, 1990
106 Unilateral Order (groundwater)	June, 1991
PRP RA	March, 1992
Preliminary Close Out Report	June, 1995

ESD ( intermittent pumping)	October, 1998
PRP Remedial Design	June, 1999
Consent Decree	October, 1999
Five-Year Report	January, 2000

### **III. Background**

#### Physical Characteristics

The privately owned Spiegelberg property consists of approximately 114 acres and is located on Spicer Road about 40 miles west of Detroit and 5 miles south of Brighton, in Green Oak Township, Livingston County, Michigan. A rental home and barn are located on the northwest corner of the property. Gravel mining at this property predated 1940, and continues through the present time. The property is surrounded by woods, open fields, and rural residences. A paint sludge disposal area covered a section of about one-half acre in the northern third of the property at the base of a sand and gravel quarry, and became the Spiegelberg Landfill Superfund Site (Site).

The Site is located in an area of glaciated terrain. Geologic features in the vicinity of the Site include glacial outwash plains, end and ground moraines, kames, and lake or bog filled depressional features. The Site is reportedly located on a kame. Kames typically consist of stratified sand and gravels, which are deposited in contact with glacial ice. The kame feature on Site is surrounded by terminal and ground moraines, which typically consist of poorly sorted and unstratified glacial deposits of clay, silt, sand, and gravel. These glacial drift deposits in the vicinity of the Site have a thickness ranging from approximately 150 to 180 feet. The glacial drift overlies older consolidated sedimentary bedrock of the Coldwater Shale Formation. The glacial drift deposits in the area provide the potable water resource since the Coldwater Shale Formation is considered to be relatively impermeable. From a groundwater flow and contaminant transport point-of-view, the important stratigraphic units beneath the Site include the following: an upper aquifer unit; a confining clay unit; a lower aquifer unit; and the Coldwater Shale Formation.

The upper aquifer unit consists of layers of fine to coarse sand, sand and gravel, and clay and silt. The sand and the sand and gravel layers contain varying amounts of silt and clay. The interbedding of these deposits at the Site is expected to reduce the effective vertical permeability compared to the horizontal permeability. The confining clay unit, which is comprised of a silty clay, is believed to be continuous below the Site although it pinches out below the Site to the west. This clay unit, which confines the lower aquifer, varies in thickness from approximately

30 feet to 50 feet and exists roughly between elevations 790 feet above mean sea level (AMSL) and 840 feet AMSL.

The lower aquifer unit, which is situated below the confining clay, is a sand unit similar to the upper aquifer unit. This unit directly overlies the weathered blue clays of the Coldwater Shale Formation. In general, the horizontal groundwater flow direction under natural conditions in the upper aquifer is directed from the south to slightly west of north. However, in the southwest portion of the Site, groundwater flow is in a northwesterly direction. The aquifer parameters of significance are as follows: the saturated thickness of the upper aquifer ranges from approximately 20 to 60 feet; the range of hydraulic conductivities varies from 40 to 100 feet/day for the upper aquifer; the average horizontal hydraulic gradient of the upper aquifer at the Site, under non-pumping conditions, ranged from 0.002 to 0.007 feet/foot; the average vertical hydraulic gradient was estimated at 0.2 feet/foot and was directed downward; and based on these values of 0.007 for the horizontal hydraulic gradient and a hydraulic conductivity of 50 feet/day for the upper aquifer, the average groundwater velocity, under natural (non-pumping) conditions, was estimated to be 1.2 feet/day or 440 feet/year.

#### Land and Resource Use

The Spiegelberg property is located to the west of the adjacent Rasmussen Dump Superfund Site. A rental home and barn are located on the northwest corner of the property. Domestic refuse from this home is disposed east of two large metal buildings near the center of the property. The Spiegelberg property is surrounded by woods, open fields, and rural residences. Land neighboring the Site contain a mixture of commercial/residential, but primarily residential properties. A gravel/sand mining operation is conducted west of the paint sludge area. Livestock are grown on the property to the south and west of the paint sludge area.

#### History of Contamination

Preliminary sampling and analysis of groundwater in the paint sludge area indicated the presence of high concentrations of organic and inorganic HSL compounds. The HSL chemicals included acetone, 2-butanone, benzene, toluene, xylenes, 1,1,1-trichloroethane, 1,1-dichloroethane, 4-methyl-2-pentanone, ethylbenzene, chlorobenzene, bis(2-ethylhexyl)phthalate, di-N-octyl phthalate, di-N-butyl phthalate, chloroethane, 2-hexanone, cadmium, nickel, and lead.

#### Initial Response

During the RI the detection of organic constituents in the paint sludge area and downgradient monitoring wells, and the mobility characteristics of the compounds found in the paint sludge area, suggested that transport via groundwater was a major potential pathway at the site. These results indicated the need for remedial action to address the wastes and contaminated soils contained in the paint sludge disposal area on the site, in order to reduce or eliminate exposure of

potential receptors to site contaminants. A phased feasibility study was prepared for the remedy selection process, and in September 1986 a ROD was signed which called for the removal and off-site treatment of wastes and contaminated soils in the Paint Sludge Area.

#### Basis for Taking Action

**Paint Sludge Area:** During the RI the detection of organic constituents in the paint sludge area indicated the need for remedial action to address the wastes and contaminated soils contained in the paint sludge disposal area, in order to reduce or eliminate exposure of potential receptors to site contaminants. The 1986 ROD addressed the contaminated soils source.

**Groundwater:** The mobile characteristics of the compounds found in the paint sludge area indicated that transport to groundwater was a major potential pathway at the Site, and indicated the need for a groundwater remedy. The 1990 ROD addressed the contaminated groundwater problem.

### **IV. Remedial Actions**

#### Remedy Selection

##### **Paint Sludge Area: 1986 Source Control ROD**

A phased feasibility study was prepared for the remedy selection process and in September, 1986, a ROD was signed, which called for the removal and off-site treatment of wastes and contaminated soils in the Paint Sludge Area. The EPA had conducted a search for PRP's and on December 12, 1985 the Ford Motor Company, James Spiegelberg, and Al Pearson were sent Special Notice Letters. On December 28, 1988 a Consent Decree for the source-control operable unit was entered into between the State of Michigan, U.S. EPA, and Ford Motor Company. Ford proposed to fund the removal of wastes and all soils down to groundwater in the paint sludge area, a remedy that exceeded the ROD requirements.

##### **Groundwater: 1990 Remedial Action ROD**

Public comment on the Proposed Plan for the groundwater pump and strip remedy extended from August 31, 1989, through October 31, 1989 (at the request of the PRPs). The remedial action selected by U.S. EPA was embodied in the June 29, 1990 ROD, for which the State of Michigan gave its concurrence. U.S. EPA entered into negotiations with the PRPs for the Site in January, 1991, for the performance of the RD/RA. Negotiations were extended at the PRP's request twice but failed to achieve a consent decree. On July 8, 1991 the U.S. EPA issued a 106 Unilateral Order to the Ford Motor Company and James Spiegelberg to finance and undertake the cleanup of contaminated groundwater at the Site. The Ford Motor Company and James Spiegelberg

agreed to perform the remedial design and remedial action.

The response action selected in the 1990 ROD is a treatment remedy which addressed the threat posed by the groundwater contamination beneath the site and included the following components:

- a. Procurement and implementation of institutional controls/deed restrictions prohibiting the use of groundwater underlying the Site; any residential or commercial use of the property that may interfere with the remedy at the Site, and; any other activity which may damage any remedial action component of the remedy.
- b. Implementation of a RD Data Collection Program to confirm the hydrogeologic site characterization and chemical characterization of groundwater, and to conduct field tests and treatability studies for the purpose of Remedial Design. The results of the RD Data Collection Program will supplement the existing data and be used to design the treatment system and extraction/injection well networks;
- c. Construction of a groundwater extraction system to capture and extract groundwater for treatment from the affected groundwater zones;
- d. Construction of a groundwater treatment plant to treat the extracted groundwater prior to reinjection;
- e. Construction of a groundwater injection system to discharge the treated groundwater. The injection system shall provide for a "closed loop" system and enhance movement of the affected groundwater towards the extraction wells;
- f. Construction of fencing to secure the constructed treatment plant;
- g. Implementation of all operation, maintenance and monitoring activities for the completed Remedial Action activities including, but not limited to, operation and maintenance of the groundwater treatment plant and monitoring the progress of groundwater remediation; and
- h. Implementation of a residential well monitoring program.

#### Remedy Implementation: 1986 Source Control ROD

Excavation commenced on August 10, 1989. The waste paint area was excavated to the surveyed groundwater level and to the visual lateral extent of the waste. Clean soil from the cutback around the periphery of the waste pit was placed on the soil storage cell and used for

backfill at the completion of the source control activities. A total of 817 loads of paint sludge and debris totaling 19,300 tons were transported and disposed of at Wayne Disposal from August 14 to September 20, 1989. A total of 1,217 loads of subsoil totaling 29,600 tons were transported and disposed of at Wayne Disposal from September 20 to October 23, 1989. A total of 425 loads of subsoil totaling 9,600 tons were transported and disposed of at CID from October 24 to November 15, 1989. Project closeout activities consisted of backfilling operations, final grading, disposal of decontamination wash waters and the removal of all site facilities including all concrete pads, construction trailers and fencing. The remedial action conducted at the site complied with all U.S. EPA quality assurance and quality control (QA/QC) procedures and protocol. Only EPA analytical methods were used. The final inspection of the site was completed by the MDNR Project Coordinator and U. S. EPA Remedial Project Manager on February 8, 1990, following demobilization activities. The source-control operable unit removed all sources of contaminants that could migrate into the groundwater so a five-year review was not required. Twelve private wells near the site have been monitored periodically by the Livingston County Health Department. There has been no migration of contaminated groundwater to these wells.

#### Remedy Implementation: 1990 Groundwater ROD

At the completion of an on-site pump and strip treatment pilot plant the Remedial Action construction activities began in November, 1994. Construction activities included: site clearing and regrading, installation of extraction and reinjection wells and associated piping systems, erection of a building and installation of process equipment for treating the contaminated groundwater, access road upgrade, and fencing around the treatment facility. A pre-final inspection of the construction activities was conducted by the MDNR and U.S. EPA remedial project managers and the U.S. EPA ARCS oversight contractor on June 9, 1995. During the pre-final inspection, it was determined that the extraction, reinjection and treatment systems were constructed as designed and were operational.

An approved Quality Assurance Project Plan (QAPP) for pre-construction and confirmation sampling and analysis was utilized during the remedial design and remedial action to ensure that all analytical results reported are accurate to the degree necessary for compliance with the ROD. The laboratories used to conduct the pre-construction and confirmation analyses were determined to be acceptable for use by the U.S. EPA Region 5 Environmental Sciences Division based on previous laboratory audits.

A Construction Quality Assurance Plan (CQAP) was prepared in conjunction with the remedial design to address the activities necessary to ensure compliance with the requirements of the remedy. The protocols contained in the CQAP were employed during construction to ensure that the treatment system would perform in accordance with the ROD and RD plans and specifications. Details of the procedures used to ensure the quality of the construction work are contained in the approved CQAP.

The groundwater monitoring program implemented during the Operation and Maintenance (O&M) phase was performed in accordance with the approved QAPP for O&M. The laboratories used for the analysis of the groundwater samples were determined to be acceptable for use by the U.S. EPA Region 5 Environmental Sciences Division based on previous laboratory audits.

### Significant Differences from the 1990 ROD Remedy

#### 1990 ESD: Taste and Odor

Based on a review of the scientific studies indicating the Taste and Odor thresholds for toluene and xylenes were 40 ppb and 20 ppb, respectively, for the application of Rule 299.5709(d) of Michigan Act 307, U. S. EPA in consultation with MDNR, determined these studies were unreliable. Consequently the corrected values for toluene and xylenes were 800 ppb and 300 ppb, respectively, as determined using EPA Method 140.1 (Threshold Odor, Consistent Series). The 1990 ESD Cleanup Standards are more stringent than the U. S. EPA Safe Drinking Water Act MCLs of 1000 ppb for toluene and 10,000 ppb for xylenes, and do not exceed the HLSC. U.S. EPA considered the MCL's and HLSC to be protective of human health. U.S. EPA determined that no public comment period was necessary for this ESD since the changes did not fundamentally alter the overall approach intended by the remedy presented in the ROD.

#### 1998 ESD: Intermittent Pumping and Cleanup Standards

##### Intermittent Pumping

In March 1998, the PRPs petitioned the U.S. EPA to adopt intermittent pumping as the operational mode for the treatment system as provided for in Section II.D of the 1991 Spiegelberg SOW, and a modification of the monitoring requirements that were consistent with Section II.F.I. of the SOW. An ESD for intermittent pumping and semi-annual sampling was issued in October 1998 based on the monitoring results that indicated only trace contamination was present in the ground water plume, and results of groundwater studies conducted by the PRPs in early March, 1990, and in the summer of 1998, that demonstrated that the contaminated plume had not migrated beyond the Spiegelberg property limits. Intermittent operation of the groundwater remediation system commenced on September 20, 1998. U.S. EPA requested additional monitoring wells be included downgradient of the plume centerline to further confirm that the plume was being contained as specified in the ROD. U.S. EPA approved the PRPs Operating Plan on September 14, 1998. This Plan called for confirmatory hydraulic monitoring, additional hydrogeologic investigations (including vertical aquifer sampling), installation of additional monitoring wells, and a contingency plan. The confirmatory sampling report was submitted in January, 1999, and the hydraulic investigation results were submitted in April, 1999. The results of VOCs analysis from all groundwater monitoring events post intermittent pumping mode have shown no exceedences of contaminant concentrations in either the upper or lower aquifers that would trigger contingency requirements.

## Cleanup Standards

In 1994, the State of Michigan promulgated Administrative Rules pursuant to Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Part 201), which regulates and establishes the criteria for the cleanup of sites with contamination. The October 1998 ESD also revised the health based 1990 ROD contaminants of concern cleanup standards to maximum contaminant levels (MCLs) or residential health-based criteria under MDEQ Part 201 (See Table 1 attached). These changes did not compromise the protection of human health and the environment. U.S. EPA determined that no public comment period was necessary for this ESD since the changes did not fundamentally alter the overall approach intended by the remedy presented in the ROD.

## System Operation and Maintenance

The 1998 ESD placed the pump and strip process on intermittent pumping status. All process activity, including associated O&M operations, except for monitoring, was suspended. The monitoring well system was expanded as specified in the 1998 ESD. The monitoring well system contains plume centerline wells, sentinel wells (perpendicular to centerline wells), plume boundary wells and background wells (upgradient of the plumes). These wells were sampled semi-annually, and later annually, using Low-Flow sample techniques.

## **V. Progress since the last Five-Year Review**

The confirmation monitoring period (post intermittent pumping monitoring) included twelve monitoring events since 1998, to demonstrate continued compliance with the 1998 Cleanup Standards. Samples were analyzed for VOCs which included Table 1 compounds, for all sampling events and for HSL chemicals (excluding Herbicides and Pesticides), for the first and last sampling events. The HSL analysis includes all chemicals found in the soils or groundwater during the RI. Using the HSL list for the final analysis insures that all chemicals found during the RI are below health based values. Demonstration monitoring was completed in 2004. The results show that the 1998 Cleanup Standards in Table 1 have been achieved.

## **VI. Five-Year Review Process**

### Administrative Components

This Five-Year Review was based, in part, on Site visits conducted from December 2000 to November 2004, during oversight of the monitoring events, and the analysis of the data contained in the monitoring reports.

### Community Involvement

Initially public interest in the Spiegelberg site was high. A Citizens ACTION Committee was formed by concerned home owners and met with MDNR and U. S. EPA personnel on a regular basis through the RI/FS activities. In addition, periodic Newsletters were mailed to over 200 local residents, officials, and other interested parties with information on the status of activities and findings during the RI. However public interest has been low since the paint sludge source removal was completed.

### Interviews.

No interviews were conducted in connection with this five year review.

### Site Inspection

An official Site inspection was conducted on November 9, 2004, hosted by the PRP's contractor. All process equipment, monitoring wells and fencing were intact. Some minor repairs to the fence were being planned by the PRPs.

### Document and data review

The Project Manager reviewed documents, including the RODs, ESDs, Construction Completion Report, PCOR and data evaluation of the post monitoring events. U.S. EPA completed this Five-Year Review based upon the information obtained from these sources and activities. The documents and data reviewed in preparing this Five-Year Review are listed at the end of this report.

## **VII. Technical Assessment**

**Question A: Is the remedy functioning as intended by the decision documents? YES**

### Remedial Action Performance

The pump and strip remedy effectively reduced all plume contaminants of concern to below MCL values. There has been no rebound of contaminants during the conformation monitoring period.

### System Operation and Maintenance

The pump and strip remedy has been shut down (intermittent pumping status) since 1998, eliminating all mechanical O&M activities. Since 1998 O&M for the Site consisted of plume

monitoring, monitoring well maintenance, perimeter fence repair and site inspections.

### Monitoring Well Systems

Additional monitoring wells were added in 1998 to complete the intermittent pumping monitoring system. This well system contained plume centerline wells, sentinel wells (perpendicular to centerline wells), plume boundary wells and background wells (upgradient of the plume). These wells were sampled using Low-Flow sample techniques.

### Implementation of Institutional Controls and Other Measures

The Deed Restrictions on the Spiegelberg property prohibit mining activities on the Spiegelberg property that may interfere/compromise the adjoining Rasmussen Superfund Site remedy. This Deed Restriction also prohibits interfering with existing or future monitoring wells on the Spiegelberg property needed to implement the Rasmussen Site groundwater remedy. The MDEQ contracted the local Health Department to monitor all residential wells with potential contamination on an annual basis. Fencing and warning signs are in place at the Site.

**Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of the remedy still valid? YES.**

### Update of the Drinking Water Criteria to MDEQ Part 201 Health Based Criteria

MDEQ Part 201 Residential Health Based Groundwater Criteria reflect concentrations in drinking water which are safe for long-term, daily consumption. Clean-up criteria for several chemicals have changed since the 1990 ROD, based on MDEQ part 201, Environmental Remediation, of the NREPA, 1994 PA 451, as amended (Part 201). Table 1 presents the original 1990 ROD clean-up standards, and the revised 1998 ESD cleanup standards. These cleanup standards are the same as the Maximum Contaminant Levels (MCLs) of the Federal drinking water standards promulgated under the Safe Drinking Water Act 40 CFR 141. U.S. EPA has determined that the changes to the Cleanup Standards are protective of human health and the environment, and are acceptable changes to the ROD Cleanup Standards.

### Changes in Exposure Pathways

There have been no changes in the potential exposure pathways at the Site since the implementation of the remedy for the Site. There have been no land use changes at the Site nor are any expected in the future.

### Changes in Toxicity and Other Contaminant Characteristics

Neither the toxicity factors for the contaminants of concern nor other contaminant characteristics

have changed in a way that could affect the protectiveness of the remedy.

#### Changes in Risk Assessment Methods

Standardized risk assessment methods have not changed in a way that could affect the assessment of the protectiveness of the remedy.

#### Expected Progress Toward Meeting Remedial Action Objectives

The remedy for the Site is complete. The post intermittent pumping monitoring has shown no rebound in HSL or COCs during any monitoring event, and meet the 1998 ESD clean-up standards.

#### Changes in Standards and To Be Considered Criteria

There are no standards identified in the ROD which have been revised, no newly promulgated standards and no TBC used in selecting the cleanup levels at the Site that have changed and could affect the protectiveness of the remedy.

**Question C: Has any other information come to light that could call into question the protectiveness of the remedy? NO**

#### Technical Assessment Summary

There have been no newly identified human health or ecological risks, impacts from natural disasters, or any other information that has been identified that could affect the protectiveness of the remedy for the Site.

### **VIII. Issues:**

Operation of the 1990 ROD remedy of pump and strip had effectively reduced the contaminants of concern to near clean-up standards by 1998. In 1998 an ESD authorized "intermittent pumping" status operation (equipment left in place but not operated) as provided for in the SOW. The 1998 ESD also revised the groundwater cleanup standards. The pump and strip remedy was to be reactivated if the groundwater monitoring results indicated a "rebound" in risk based or hazard index chemical compounds during the post remedy monitoring period. The confirmation monitoring period (post intermittent pumping monitoring) consisted of twelve monitoring events from September 1998 to December 2004. The monitoring results have demonstrated continued compliance with the 1998 Cleanup Standards, and has established that the Site has achieved groundwater cleanup goals. No contaminants of concern have been found above MCLs since 1998. In addition, no other HSL compounds were present above risk based levels for the final

December 2004 monitoring event. The HSL analysis includes all chemicals found during the RI. Conducting the HSL analysis insures that all chemicals found during the RI are below health based values.

#### **IX. Recommendations and Follow-up Actions:**

This is the final five-year review for the Spiegelberg Site. Groundwater treatment has restored the aquifer to clean-up standards. Delisting should be evaluated and pursued as appropriate.

#### **X. Protectiveness Statement:**

The remedy is protective of human health and the environment, and was constructed in accordance with both Records of Decision. All waste and soils in the paint sludge pit were removed down to groundwater under the 1986 source removal ROD. The 1990 ROD for groundwater restoration has been completed.

#### **XI. Next Five-Year Review**

This is the final five-year review for the Spiegelberg Site. Groundwater treatment has restored the aquifer to clean-up standards, allowing for unrestricted use of the groundwater and property.

### List of Documents Reviewed

- 1 Record of Decision, Spiegelberg Landfill Site, Livingston County, Michigan U.S.EPA,  
September, 1986.
- 2 Record of Decision, Spiegelberg Landfill Site, Livingston County, Michigan U.S.EPA,  
June, 1990.
- 3 ESD, Spiegelberg Landfill Site, Livingston County, Michigan U.S.EPA, June, 1990
- 4 ESD, Spiegelberg Landfill Site, Livingston County, Michigan U.S.EPA, October, 1998.
- 5 Preliminary Close Out Report, Spiegelberg Landfill Site, Livingston County, Michigan  
U.S.EPA, June, 1995.
- 6 Five-Year Review, Spiegelberg Landfill Site, Livingston County, Michigan U.S.EPA,  
January, 2000.

Table 1      Clean-up Standards  
Figure 1      Site Location Map

Table 1  
Clean-up Standards

<u>COMPOUND</u>	1998 ESD <u>CLEAN-UP STANDARDS</u>	1990 ROD <u>CLEAN-UP STANDARDS</u>	Dec 2004 <u>RESULTS</u>
Benzene	5.0	1.2	3.2
Vinyl chloride	2.0	1.0	ND(1.0)
2-butanone	13,000	350.0	ND(10.0)
2-hexanone	1000	50.0	ND(10.0)
Toluene	790	800.0	ND(1.0)
Xylenes	280	300.0	ND(1.0)
Lead	4.0	5.0	ND(3.0)

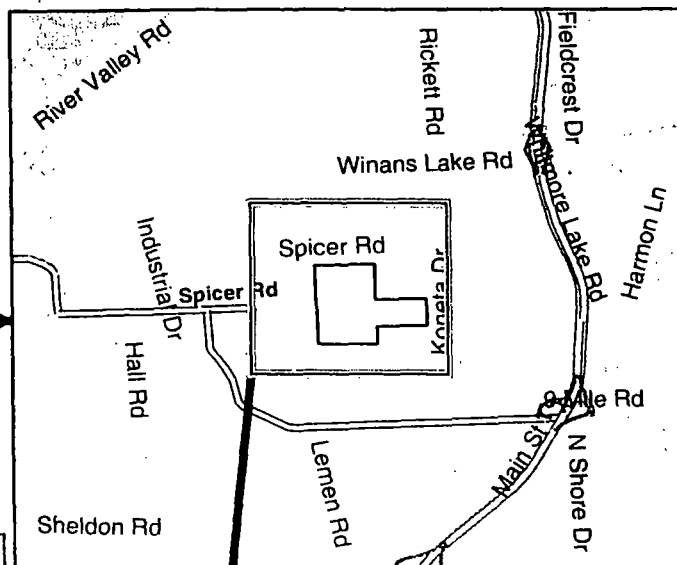
All values in ppb

ND Non Detect at (1.0 indicates detection level)

# Spiegelberg Landfill Superfund Site Livingston County, Michigan

## 2) Livingston County

### 1) State



### 3) Spiegelberg Landfill Superfund Site



**Figure 1**

Plot created by Eva Sinha U.S. EPA Region 5 11/08/2004  
Color Infra-Red Image Date: 4/23/1996